Overview

The SITRANS LU01 is an ultrasonic long-range level controller for liquids and solids in a single vessel up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Single point, long-range level monitoring
- Easy to install; easy to program using removable infrared keypad (optional)
- Compatible with all Echomax® transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinx compatible
- High/low alarms

Application

The system consists of a SITRANS LU01 monitor linked to a non-contacting ultrasonic transducer that can be mounted up to 365 m (1200 ft) away. The SITRANS LU01 will measure distance, level or volume, and it features patented Sonic Intelligence® echo processing software for superior reliability.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

An on-board communications port automatically configures for RS-232, RS-485 or bi-polar current loop. The SITRANS LU01 will connect to a DCS or PLC using Siemens SmartLinx® interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets

Overview

The SITRANS LU02 is a dual point ultrasonic long-range level controller for liquids and solids in one or two vessels up to 60 m (200 ft).

Handheld programmer shown is an accessory and must be ordered separately.

Benefits

- Dual point, long-range level monitoring
- Easy to install; easy to program using removable infrared keypad (optional)
- Compatible with all Echomax® transducers
- Backlit LCD display with reading in standard engineering units
- Automatic level-to-volume conversion for standard or custom tank shapes
- Dolphin Plus and SmartLinx compatible
- High/low alarms

Application

SITRANS LU02 will measure liquids, solids or a combination of both in one or two vessels of different sizes, shapes and configurations up to 60 m (200 ft).

The system uses ultrasonic technology to measure level, space, distance, volume or average/differential. It features patented Sonic Intelligence® echo processing software for superior reliability. Transducers can be mounted up to 365 m (1200 ft) from the monitor.

Readings are displayed in user-selectable linear engineering units on the backlit LCD.

It features an onboard communications port that automatically configures for RS-232, RS-485 or bi-polar current loop. It will connect to a DCS or PLC using Siemens SmartLinx® interface modules, giving you remote 2-way communication and full parameter access. Modules for popular industrial buses can be factory installed or added later to meet changing needs. No external gateway is required, reducing hardware and cabling costs.

- Key Applications: chemical storage, liquid storage, bulk solids storage (gravel, flour bins, grains, cereals), plastic pellets, tripper car

SITRANS LU01 and LU02

Technical specifications

Mode of operation	
• Measuring principle	Ultrasonic level measurement
• Measuring range	0.3 to 60 m (1 to 200 ft)
• Measuring points	SITRANS LU01: Max. one point; SITRANS LU02 Max. two points
Output signal	
• Ultrasonic transducer	Echomax series, ST-H transducers
• Relays	4 SPDT Form C relays, rated at 5 A at 250 V AC, resistive load
• mA output	0/4 to 20 mA, optically isolated
- Max. load	750 Ω, isolated, 30 V
- Resolution	0.1 % of range
- Outputs	SITRANS LU01: Max. one mA output SITRANS LU02: Max. two mA outputs
Accuracy	
• Error in measurement	0.25% of range or 6 mm (0.24"), whichever is greater
• Resolution	0.1% of measuring range or 2 mm (0.08"), whichever is greater
• Temperature compensation	-50 to +150 °C (-58 to +302 °F) • Integral temperature sensor • External TS-3 temperature sensor (optional) • Programmable fixed temperature
Rated operating conditions	
Ambient conditions	
Ambient temperature for enclosure	-20 to +50 °C (-4 to +122 °F)
Design	
Weight	2.7 kg (6 lbs)
Material (enclosure)	Polycarbonate
Degree of protection (wall mount)	IP65
Electrical connection	
• Ultrasonic transducer cable extension	RG62-A/U coaxial cable with low capacitance
• mA output signal	2-core copper conductor, twisted, shielded, 0.5 to 0.75 mm² (22 to 18 AWG), Belden® 8760 or equivalent is acceptable
• Electrical connection and relay connection	Copper conductor according to local requirements, rated 250 V 5 A
• Synchronization	Up to 16 LU01/LU02 units can be synchronized together

Power supply	
AC model	100/115/200/230 V AC ± 15%, 50/60 Hz, 31 VA
DC model	18 to 30 V DC, 25 W
Displays and controls	51 x 127 mm (2 x 5") graphics LCD with backlighting
• Memory	EEPROM (non-volatile), no backup battery required
• Programming	Using removable programmer (ordered separately) or Dolphin Plus (option)
Certificates and approvals	CE, $CSA_{US/C}$, FM, ATEX II 3D Lloyd's register of Shipping (Categories ENV1, ENV2, ENV3 and ENV5)
Options	
• External temperature sensor	TS-3
• Communications	• SmartLinx: protocol-specific modules as interface for popular industrial fieldbus systems • Dolphin Plus: Siemens Windows®-compatible interface and ComVerter link (infrared)

Selection and Ordering data		Order No.
SITRANS LU01/LU02	C)	**7ML5004-**
Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).		■■■■■-■■
Number of measuring points		
LU01 version, 1 point		**1**
LU02 version, 2 points		**2**
Input voltage		
100/115/200/230 V AC, voltage selector switch		**A**
18 to 30 V DC		**B**
Feature software		
Standard		**A**
Application software		
Standard		**1**
Data communications		
No module (SmartLinx ready)		**0**
SmartLinx Allen-Bradley® Remote I/O module		**1**
SmartLinx PROFIBUS DP module		**2**
SmartLinx Modbus® RTU module		**3**
Enclosure		
Wall mount		**1**
Wall mount, drilled, 6 x M20x1.5		**3**
Approvals		
CE, $CSA_{US/C}$, FM[1]		**A**
CE[2]		**B**
ATEX II 3D[1]		**C**
Further designs		Order code
Please add "**-Z**" to Order No. and specify Order code(s).		
Stainless steel tag [69 x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text		**Y15**

Selection and Ordering data		Order No.
SITRANS LU01/LU02	C)	**7ML5004-**
Single or dual point ultrasonic long-range level monitoring system for liquids and solids, and ranges up to 60 m (200 ft).		■■■■■-■■
Operating Instructions		
SITRANS LU01, English	C)	**7ML1998-5BE02**
SITRANS LU01, French	C)	**7ML1998-5BE12**
SITRANS LU01, German	C)	**7ML1998-5BE32**
SITRANS LU02, English	C)	**7ML1998-5BD02**
SITRANS LU02, French	C)	**7ML1998-5BD12**
SITRANS LU02, German	C)	**7ML1998-5BD32**
Note: The Operating Instructions should be ordered as a separate line item.		
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.		
Other Operating Instructions		
SmartLinx Allen-Bradley Remote I/O, English	C)	**7ML1998-1AP03**
SmartLinx PROFIBUS DP, English	C)	**7ML1998-1AQ03**
SmartLinx PROFIBUS DP, German	C)	**7ML1998-1AQ33**
SmartLinx PROFIBUS DP, French	C)	**7ML1998-1AQ12**
SmartLinx Modbus, English	C)	**7ML1998-1BF01**
SmartLinx Modbus, German	C)	**7ML1998-1BF31**
Note: The appropriate SmartLinx Operating Instructions should be ordered as a seperate line on the order.		
Accessories		
Handheld programmer		**7ML1830-2AN**
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"), one text line, suitable for enclosures		**7ML1930-1AC**
M20 cable gland kit (6 M20 cable glands, 6 M20 nuts, 3 stop plugs)		**7ML1830-1GM**
TS-3 Temperature Sensor - see TS-3 on page 5/186		
Spare parts		
Card, LU01 mother main, comm ready	C)	**7ML1830-1KX**
Card, LU02 mother main, comm ready	C)	**7ML1830-1MA**
Card, LU02 daughter, comm ready	C)	**7ML1830-1LP**
Card, LU01 daughter, comm ready	C)	**7ML1830-1LN**
Card, display		**7ML1830-1LQ**
See SmartLinx product page 5/301 for more information.		

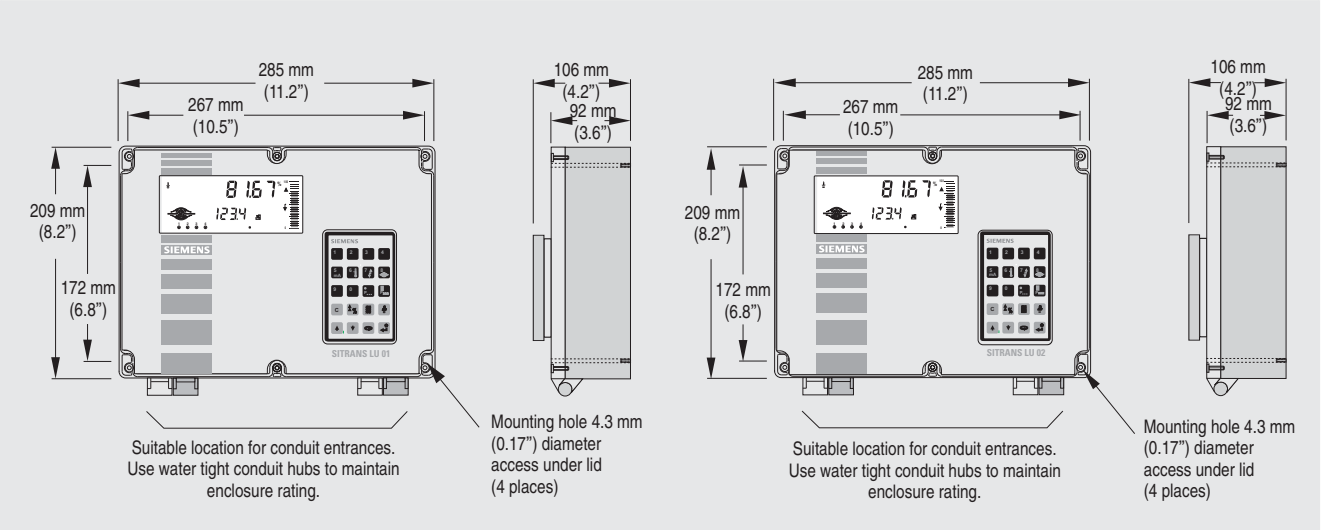
[1] Available with enclosure option 1 only
[2] Available with enclosure option 3 only

C) Subject to export regulations AL: N, ECCN: EAR99

®Modbus is a registered trademark of Schneider Electric.
®Allen-Bradley is a registered trademark of Rockwell Automation.
TMDeviceNet is a trademark of Open DeviceNet Vendor Association (ODVA).

SITRANS LU01 and LU02

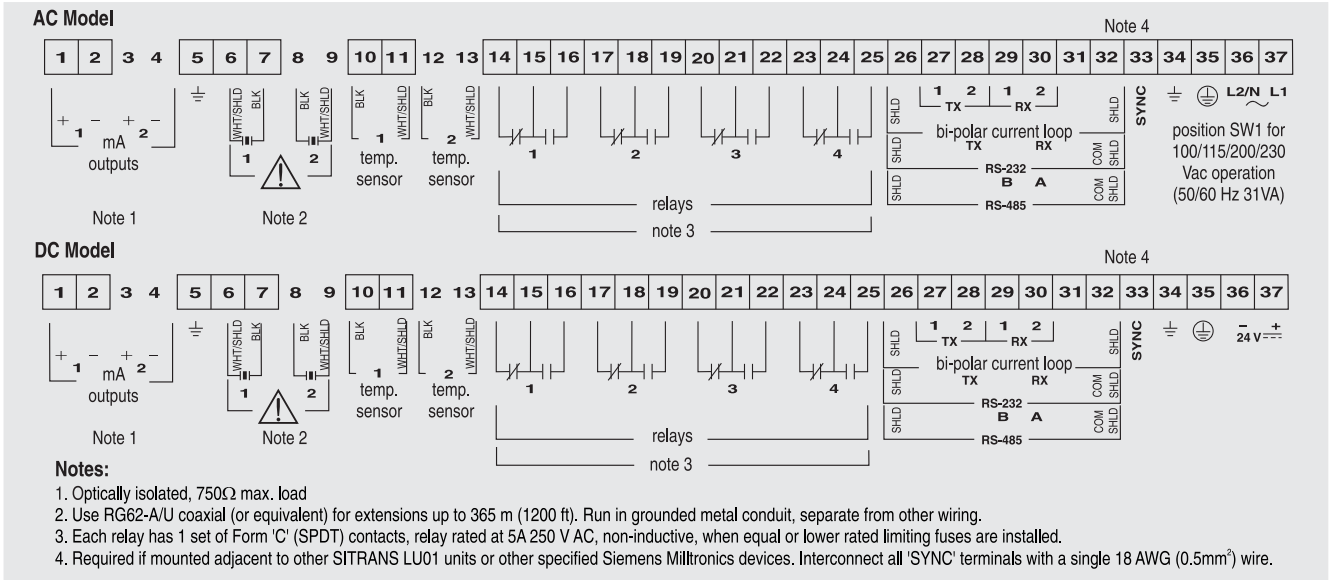
Dimensional drawings



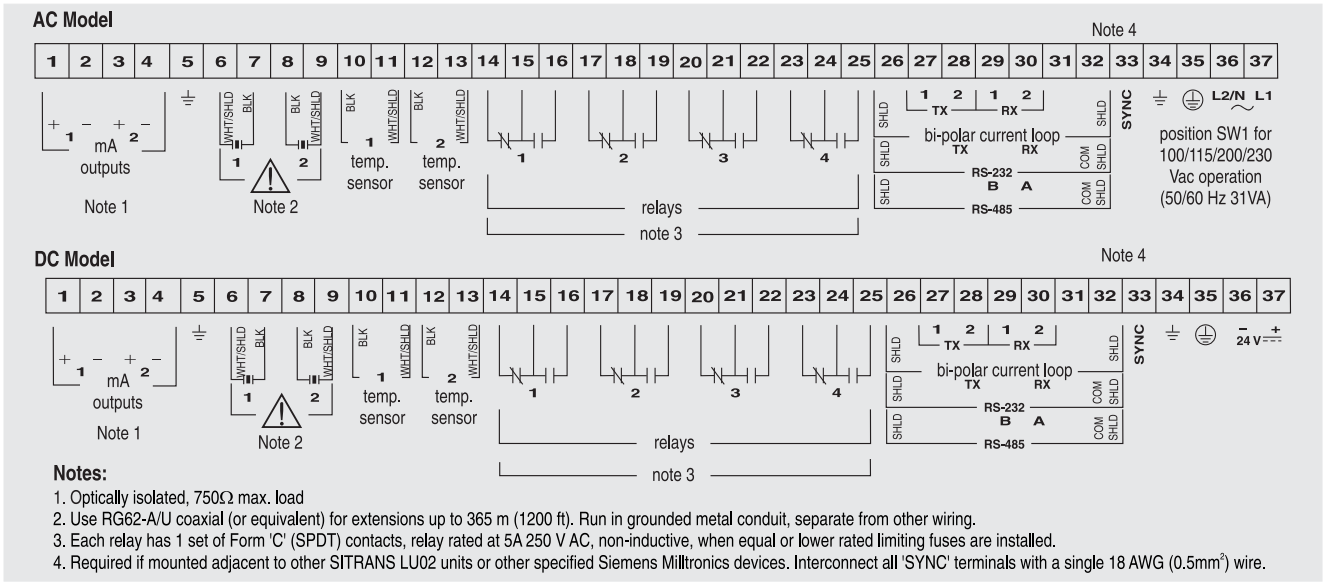
Dimensional drawings for SITRANS LU01 (left) and SITRANS LU02 (right)

5

Schematics


AC Model
Note 4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37
mA outputs
Note 1
Note 2
temp. sensor
temp. sensor
relays
note 3
bi-polar current loop
RS-232
RS-485
SYNC
L2/N L1
position SW1 for 100/115/200/230 Vac operation (50/60 Hz 31VA)
DC Model
Note 4
24 V
Notes:
1. Optically isolated, 750Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU01 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5mm²) wire.

SITRANS LU01 connections


AC Model
Note 4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37
mA outputs
Note 1
Note 2
temp. sensor
temp. sensor
relays
note 3
bi-polar current loop
RS-232
RS-485
SYNC
L2/N L1
position SW1 for 100/115/200/230 Vac operation (50/60 Hz 31VA)
DC Model
Note 4
24 V
Notes:
1. Optically isolated, 750Ω max. load
2. Use RG62-A/U coaxial (or equivalent) for extensions up to 365 m (1200 ft). Run in grounded metal conduit, separate from other wiring.
3. Each relay has 1 set of Form 'C' (SPDT) contacts, relay rated at 5A 250 V AC, non-inductive, when equal or lower rated limiting fuses are installed.
4. Required if mounted adjacent to other SITRANS LU02 units or other specified Siemens Milltronics devices. Interconnect all 'SYNC' terminals with a single 18 AWG (0.5mm²) wire.

SITRANS LU02 connections